UDC 621.372.852.3:621.372.826

USSR

VZYATYSHEV, V. F., RYABOV, B. I., RAYEVSKIY, G. P.

"Attenuator without a Phase Shift Based on Dielectric Wave Guides"

Translation: The schematic is presented for an attenuator which operates by the principle of interference of two counterphase wave processes with identical amplitudes. A study was made of the double-channel version in which the input signal is divided equally between both channels. In each channel the signals passing through the phase converters undergo identical with respect to magnitude but opposite in sign phase shifts and are then added in an adder, forming a signal the amplitude of which is proportional to the cosine of the phase shift. The characteristics of the attenuator are analyzed. An experimental model is described. There are 3 illustrations.

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UDC 615.12+616 59

USSR

BARKOV, N. K., Candidate of Medical Sciences, RAYEVSKIY, G. S.,
Candidate of Medical Sciences and SKOLDINOV, A. P., Candidate of
Chemical Sciences

"Psychopharmacollgical Substances"

Abstract: WHO recommends that the group of psychopharmacological
substances include only those products which effect the psychic
functions and the experinece of life. The group includes innumer-
able neuropsychiatiric drugs. Neuroleptics, acting on the auto-
nomic nervous system, defres the autonomic functions in schizo-
phrenia and maniacal states by disturbing the extraphyramidal system,
they may induce lack of muscular coordination. Derivatives of
phenothiazine, thioxanthene, reserpine and benzoquinoline are re-
presentative of this group. Tranquilizers, the anti-anxiety drugs,
include anticonvulsants, barbiturates, meprofan, some phenothia-
zines, and hundreds of allied products. Antidepressants, used in
manic-depressive   reactions include hydrazine and some inhibitors.
1/2

USSR

BARKOV, N. K., et al., Zhurnal Vsesoyuznogo Khimichskogo Obshchestva,
imeni D. I. Mendeleyeva, Vol 51, No 2, 1970, pp 156-164

Psychostimulants such as coffee, theophylline and theobromine
stimulate body and mind, but the ephedrine and amphetamine
analogues act on the CNS as psychic stimulants. Psychotomimetics
are without therapeutic value. But with all these drugs, side
effect, allergic reactions and many untoward paradoxical syndromes
are likely to occur.

2/2

USSR

UDC 539.4:[624.011.1+624.014]

RAYEVSKIY, G. V.

"Prestressing the Walls of Welded Rolled Sheet Structural Elements"

V sb. III Mezhdunar. konf. po predvarit. napryazhennym metal. konstruktsiyam. T. 2 (Third International Conference on Prestressed Metal Structural Elements, Vol 2—collection of works), pp 228-235 (from RZh-Mekhanika, No 11, Nov 71, Abstract No 11V924)

Translation: A new technological process for manufacturing steel sheet structural elements has been developed at the Electric Arc Welding Institute imeni Ye. O. Paton, and it has become widespread in the USSR. The process is based on refraining from bending the sheets and replacing this operation by elastic and elastic-plastic bending of prewelded panels. A study was made of the phenomenon of formation of residual bending moments occurring during this operation in closed circular cylindrical shells. The effect of the stresses formed on the strength of the welded element was also studied.

1/1

- 23 -

USSR

UDC: 537.312.62

SKVORTSOVA, I. L., TARARAYEVA, Ye. M., SHMIDT, V. V., RAYEVSKIY, I. I.

"Effect of Heat Treatment on the Critical Currents of Binary Alloys of Niobium With Zirconium and Titanium"

Moscow, Sverkhprovodyashchiye splavy i soyedin.—sbornik (Superconductive Alloys and Compounds—collection of works), "Nauka", 1972, pp 101-111 (from RZh-Radiotekhnika, No 12, Dec 72, abstract No 12 D561 [résumé])

Translation: Critical current is studied as a function of external magnetic field strength for Nb-Zr and Nb-Ti alloys of different concentrations and after different annealing temperatures. The experimental data were related to existing concepts on the flow of transport current in rigid superconductors. This led to the following conclusions. Transition to the normal state in the alloy Nb-5 at.% Zr takes place as a result of destruction of electron pairs when they have reached a critical velocity. Destruction of superconductivity in alloys of Nb with 55 and 75 at.% Zr, and with 55 and 80 at.% Ti takes place due to the motion of superconducting vortices. A direct relation is found between the annealing temperature of these alloys and the force of adhesion of superconducting vortices to the

1/2

USSR

SKVORTSOVA, I. L. et al., Sverkhprovodyashchiye splavy i soyedin., "Nauka",
1972, pp 101-111

macrononhomogeneities which are segregated during heat treatment. Seven
illustrations, One table, bibliography of fourteen titles.

2/2

USSR   UDC 669.293'295'296'297.017.11:537.312.62

IVANOV, O.S., RAYEVSKIY, I. I. and STEPANOV, N.V.

Sverkhprovodyashchiye splavy sistemy niobiy-titan-tsirkoniy-gafniy (Super-conducting Alloys of the System Niobium-Titanium-Zirconium-Hafnium), Moscow, "Nauka" Press, 1971, 161 p., illustrations, bibliographic references, 1550 copies printed.

Translation of Annotation:

The monograph discusses a system based on decaying solid solutions of niobium. Data on the phase structure of two- and three-component alloys (as a part of the above quaternary system) as well as on their superconducting properties have been critically analyzed and correlated. Presented are the latest data on the phase structure of alloys produced by the authors and other investigators. Presented are, for the first time, the phase structure of the entire quaternary system Nb-Ti-Zr-Hf and the superconducting properties of this system. The effects of various factors (composition, structure, thermomechanical treatment) on changes in the critical parameters of binary, ternary, and more complex alloys are described. The book is intended for metal scientists, physical metallurgists, and other specialists engaged in the research, synthesis, and application of plastic superconducting materials.

Translation of Table of Contents:

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USSR

IVANOV, O.S., et al.,   Sverkhprovodyashchiye splavy sistemy niobiy-titan-tsirkoniy-gafniy, Moscow, "Nauka" Press, 1971.

USSR

IVANOV, O.S., et al., Sverkhprovodyashchiye splavy sistemy niobiy-titan-tsirkoniy-gafniy, Moscow, "Nauka" Press, 1971.

3/3

USSR   UDC 615.214.22:547.869(Ftorphenazinum)

LYUBIMOV, B. I., RAYEVSKIY, K. S., OSTROVSKAYA, R. U., BARKOV, N. K., and
KROLEVETS, G. N., Laboratory of the Pharmacology of Nervous System, Pharma-
cology Institute, Academy of Medical Science USSR, Moscow

"Neurotropic Properties of Fluzophenazine"

Abstract: Neurotropic properties of fluzophenazine -- 10-{γ-[4-(β-hydroxy-
ethyl)-pipersinyl-1]-propyl}-2-trifluoromethylphenothiazine dihydrochloride
were investigated. The drug was found to be a highly potent neuroleptic.
It produced catalepsy, inhibited conditioned reflexes of avoidance, spon-
taneous motor activity, averted phenamine-induced hyperactivity, prolonged
and potentiated the anesthesizing effect of sodium thiopental and hexo-
barbital, synchronized EEG, and blocked EEG-activation provoked by an
acoustic stimulant and phenamine. Fluphenazine is an extremely potent
antiemetic. Compared with triftazin, fluphenazine is less toxic and
exceeds trifluoperazine in neurotropic activity.

1/1

1/2   020   UNCLASSIFIED   PROCESSING DATE--16OCT70
TITLE--THE EFFECT OF SOME ADRENERGIC BLOCKING AGENTS ON THE AMPHETAMINE
   TOXICITY IN AGGREGATED AND ISOLATED MICE -U-
AUTHOR-(02)-RAYEVSKIY, K.S., GURA, S.YA.

COUNTRY OF INFO--USSR

SOURCE--BYULLETEN' EKSPERIMENTAL'NOY BIOLOGII I MEDITSINY, 1970, VOL 89,
   NR 5, PP 62-65
DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--TOXICOLOGY, WHITE MOUSE, ADRENERGIC BLOCKING AGENT,
   AMPHETAMINE, BODY TEMPERATURE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1998/0212
                                    STEP NO--UR/0219/70/069/005/0062/0065
CIRC ACCESSION NO--AP0120910
                    UNCLASSIFIED

UNCLASSIFIED

CIRC ACCESSION NO--AP0120910   PROCESSING DATE--16OCT70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE EFFECT OF FOUR ADRENERGIC
BLOCKING AGENTS OF ALPHA AND BETA TYPE (PHENTOLAMINE, TROPAPHEN,
PROPRANOLOL, PRONETHALOL) ON THE AMPHETAMINE TOXICITY IN AGGREGATED AND
ISOLATED ALBINO MICE AND ON THE FOLLOWING INCREASE OF THE BODY
TEMPERATURE WAS STUDIED. PHENTOLAMINE, TROPAPHEN, PROPRANOLOL WERE
FOUND TO DECREASE THE AMPHETAMINE TOXICITY IN ISOLATED AND AGGREGATED
MICE. PRONETHALOL WAS FOUND TO BE EFFECTIVE ONLY IN RESPECT TO
AMPHETAMINE TOXICITY IN ISOLATED MICE. THE INCREASE OF BODY
TEMPERATURE, INDUCED BY AMPHETAMINE, WAS FOUND TO BE PARTLY PREVENTED BY
ALL THE ADRENERGIC BLOCKING AGENTS OF BOTH ALPHA AND BETA TYPE. IT IS
SUPPOSED THAT THE CENTRAL EFFECTS OF THE STUDIED AGENTS DO NOT SEEM TO
BE CAUSED BY THEIR ADRENERGIC BLOCKING PROPERTIES.   FACILITY:
INSTITUTE OF PHARMACOLOGY, USSR ACADEMY OF MEDICAL SCIENCES, MOSCOW.

UNCLASSIFIED

1/2   015

TITLE--PSYCHOPHARMACOLOGICAL AGENTS -U-   UNCLASSIFIED   PROCESSING DATE--27NOV70

AUTHOR-(03)-BARKOV, N.K., RAYEVSKIY, K.S., SKOLDINOV, A.P.

COUNTRY OF INFO--USSR

SOURCE--ZH. VSES. KHIM. OBSHCHEST. 1970, 15(2), 156-64

DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--TRANQUILIZER, HALLUCINOGEN, PHARMACOLOGY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3009/0146

STEP NO--UR/0063/70/015/002/0156/0164

CIRC ACCESSION NO--AP0139011

UNCLASSIFIED

UNCLASSIFIED   PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0139011

ABSTRACT/EXTRACT--(U) GP-O- ABSTRACT. A REVIEW IS GIVEN ON THE STRUCTURE
OF NEUROLEPTICS, TRANQUILIZERS, ANTIDEPRESSANTS, PSYCHOSTIMULANTS, AND
HALLUCINOGENS.

UNCLASSIFIED

1/2   035
UNCLASSIFIED
TITLE--NEUROTROPIC PROPERTIES OF AMINOHYDROXYACETIC AND GAMMA
AMINOHYDROXYBUTYRIC ACIDS -U-

PROCESSING DATE--23OCT70

AUTHOR-(03)-OSTROVSKAYA, R.U., ARTEMENKO, G.N., RAEVSKIY, K.S.

COUNTRY OF INFO--USSR

SOURCE--FARMAKOL. TOKSIKOL. (MOSCOW) 1970, 33(2), 137-42

DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--AMINE DERIVATIVE, HYDROXYL RADICAL, MOUSE, TOXICITY,
NEUROPHYSIOLOGY, ACETIC ACID, BUTYRIC ACID, ANESTHETIC, ANTICONVULSANT
DRUG, LIVER, ENZYME

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1997/0792

STEP NO--UR/0390/70/033/002/0137/0142

CIRC ACCESSION NO--AP0119699
UNCLASSIFIED

2/2   035
CIRC ACCESSION NO--AP0119699   UNCLASSIFIED   PROCESSING DATE--23OCT70
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. AMINOHYDROXYACETIC ACID (20 MG-KG)
AND GAMMA AMINOHYDROXYBUTYRIC ACID (40 MG-KG) GIVEN I.P. TO MICE
POTENTIATED THE ANESTHETIC EFFECTS OF NA THIOPENTAL, NA BARBITAL, AND NA
HYDROXYBUTYRATE. THE ACIDS ACTED DIRECTLY ON NEUROTROPIC COMPONENTS AS
WELL AS INDIRECTLY BY INHIBITING LIVER ENZYMES WHICH METABOLIZE THE
ANESTHETICS. GAMMA AMINOHYDROXYBUTRIC ACID AT 20 MG-KG GIVEN I.V. TO
RABBITS POTENTIATED THE STIMULATORY EFFECT OF GAMMA AMINOBUTYRIC ACID
(20 MG-KG I.V.) ON THE ELECTROENCEPHALOGRAM. AMINOHYDROXYACETIC ACID
(62.5 MG-KG I.P.) REDUCED THE TOXICITY AND LETHALITY OF SEMICARBAZIDE
(200 MG-KG I.P.) IN MICE BY 70PERCENT, WHEREAS GAMMA AMINOHYDROXYBUTYRIC
ACID REDUCED TOXICITY BY 71PERCENT AT 62.5 MG-KG I.P. AND LETHALITY BY
50PERCENT AT 50 MG-KG. HIGHER DOSES OF THIS LATTER COMPD. WERE LESS
EFFECTIVE. GAMMA AMINOHYDROXYBUTYRIC ACID PARTIALLY PROTECTED MICE
AGAINST CONVULSIONS INDUCED BY CORAZOLE (100 MG-KG S.C.), STRYCHNINE
(2.5 MG-KG S.C.), AND NICOTINE (0.5 MG-KG I.V.).
FARMAKO. NERV. SIST., INST. FARMAKOL., MOSCOW, USSR.   FACILITY: LAB.

UNCLASSIFIED

Organophosphorus Compounds

USSR

RAYEVSKIY, O. A., DONSKAYA, Yu. A., KHALITOV, F. G., and ANTOKHINA, L. A., Institute of Organic and Physical Chemistry Imeni A. Ye. Arbuzov Academy of Sciences USSR

UDC 541.6:547.1'118

"Conformation of Dialkyl(aryl)cyanomethylphosphine Oxides"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 6, Jun 73, pp 1339-1341

Abstract: IR spectra of diethylcyanomethylphosphine oxide and diphenylcyanomethylphosphine oxide show that in solutions these compounds exist in an equilibrium of two conformers. Under conditions of higher concentrations, considerable association of molecules is noted. The dipole moments of these compounds in gauche conformation, exhibiting the polar grouping P:O and C:N, are considerably below the calculated values obtained from the vector analysis, because of Coulom interaction.

1/1

USSR

UDC 541.6:547.1'118

RAYEVSKIY, O. A., KHALITOV, F. G., DONSKAYA, YU. A., and SHERMERGORN, T. M., Institute of Organic and Physical Chemistry Imeni A. Ye. Arbuzov Acad. Sc. USSR

"On the Conformations of Certain Chloromethylthiophosphinic Acid Chlorides"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 4, Apr 73, pp 795-800

Abstract: Results are reported on the study of spacial structures of the compounds with the general formula $RClP(S)CH_2Cl$ where $R = Cl$, C_2H_5, C_6H_5, $p-ClC_6H_4$, and CH_2Cl using IR spectroscopical and dipole moment methods. In solutions these compounds exist in an equilibrium of two conformers, one of which has the trans orientation of the P:S and C-Cl bonds. Analysis of intramolecular interactions has been carried out and related to the stabilization of the resulting spacial structures. It has been noted that replacement of a phosphoryl oxygen atom by an atom of sulfur has practically no effect on intramolecular interactions.
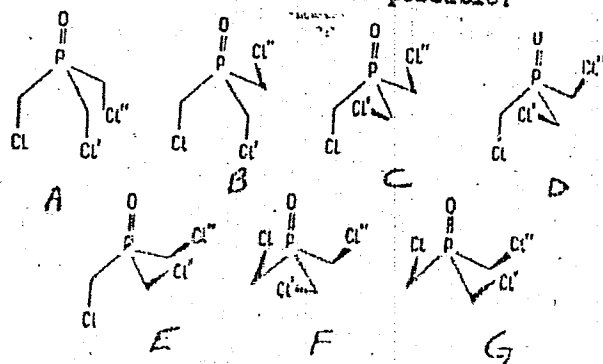
1/1

Organophosphorus Compounds

USSR

UDC 541.6:541.127.4:547.1'118

RAYEVSKIY, O. A., VERESHCHAGIN, A. N., KHALITOV, F. G., and DONSKAYA; YU. A., Institute for Organic and Physical Chemistry imeni A. YE. Arbuzov, Academy of Sciences USSR

"Analysis of Conformational Equilibrium of Tris(chloromethyl)-phosphine Oxide"

Abstract: The following conformations are possible:

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USSR

RAYEVSKIY, O. A., et al., Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 3, 1972, pp 710-712

The IR spectra, dipole moments (D.M.) and Kerr constants (K.C.) can provide information on the conformational equilibrium and the actual forms present. The D. M., in μ, and K.C., in $K \times 10^{12}$, values for the above forms from thermodynamic calculations are as follows: A, 1.19 and 45; B, 2.23 and 58; C, 416 and 63; D, 4.12 and 38; E, 5.07 and 375; F, 6.07 and -528; and F, 6.59 and -206. The measured values are 2.34 and -55, indicating a mixture of conformers. The forms C, D, and E may be eliminated due to their D.M. and K.C. values. The probable equilibria are A $\rightleftharpoons$ B and F $\rightleftharpoons$ G. The equilibria A,B $\rightleftharpoons$ F,G are unlikely on the basis not only of the closest fir to experimental and calculated parameters but also of theoretical calculations. Form F, in which all the C-Cl bonds are directed toward one side has the least steric hindrance. The considerable influence of the electrostatic interaction in indicated in that A is the most stable form. In A, the P = 0 and C - Cl dipoles are oriented antiparallel.

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- 20 -

RAYEVSKIY, O. A., VERESHCHAGIN, A. N., and KHALITOV, F. G., Institute of Organic and Physical Chemistry imeni A. Ye. Arbusov, Academy of Sciences USSR

"Conformations of Trimethylphosphate and Trimethylthiophosphate"

Abstract: There are 16 possible conformations of trimethylphosphate, six of which can be excluded from equilibrium considerations due to steric hinderance. To determine the predominant conformation among the remaining ones, the IR spectra and dipole moments of trimethylphosphate and the Kerr constants of trimethylthiophosphate were determined. The isomeric composition was determined on the basis of the integral band intensities of $\nu_{P:O}$ (1250-1350 cm^{-1}) and $\nu_{P:S}$ (570-670 cm^{-1}) in relationship to the temperature and the dielectric constant of the medium. The band at 1180 cm^{-1} (for trimethylphosphate) and at 2840 cm^{-1} (for trimethylthiophosphate) were used for comparative purposes. The conformational composition under various conditions was determined. The most stable conformation is the one with cis-orientation of one and gosh-orientation of two alkoxy groups in relationship to (thio)-phosphoryl group; one of the forms in which the alkoxy group is in the trans-position is in equilibrium with the predominant conformer. 1/1

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RAYEVSKIY, O. A., KHALITOV, F. G., and ZYABLIKOVA, T. A., Institute of Organic and Physical Chemistry imeni A. Ye. Arbuzov, Academy of Sciences USSR

"Isomeric Equilibrium of Dimethylmethylphosphonate and Diethylchlorophosphate"

Abstract: IR spectra of liquid dimethylmethylphosphonate and diethylchloro-phosphate studied in temperature range $150-300°K$ showed the existence of definite reversible spectral changes. Characteristic changes were observed in the range $400-700$ cm^{-1} corresponding to the valence vibrations of P-C and P-Cl bonds, indicating existence of an equilibrium of two isomeric forms. Internal energies ($\triangle H$) were found to be 0.75 Kcal/M for diethylchloro-phosphate and 0.40 Kcal/M for the dimethylmethylphosphonate. The relationship of absolute integral intensities of the absorption bands of ν P-Cl and ν P-C made it possible to determine the composition of the isomeric forms for given molecular dipole moments to be $60:40$ of the more polar:less polar isomer in case of diethylchlorophosphate, and $65:35$ of the less polar:more polar isomer in case of dimethylmethylphosphonate. The isomers were identified by means of the IR spectra and dipole moments. A dynamic equilibrium of the isomeric forms was pointed out by means of PMR spectroscopy.
1/1

USSR

UDC 541.6:547.1'118

RAYEVSKIY, O. A., KHALITOV, F. G., and PUDOVIK, M. A., Institute of Organic and Physical Chemistry imeni A. Ye. Arbuzov, USSR Academy of Sciences

"Conformation of O-Methyl(Phenyl)-Methylchlorophosphonates"

Moscow, Izvestiya Akad. Nauk SSSR, Seriya Khimicheskaya, No 1, Jan 72, pp 173-175

Abstract: As a continuation of their earlier study of the effect of the nature of substitutes on the conformation position of the ester group in compounds of the general formula $R_1R_2P(O)OR$, the authors take up the problem of the identification of conformers in the O-methyl(phenyl)-methylphosphonates. Infrared spectra show that for these compounds, stabilization of one conformer is a characteristic feature. The dipole-moment method is used to establish that such conformation can occur either with a form having the cis-position of the bonds P=O and O--CH_3, or one having the hauche-position (projection of OC coming between PO and PCl.).

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USSR

UDC 541.6:547.1'118

RAYEVSKIY, O. A., KHALITOV, F. G., and PUDOVIK, M. A., Institute of Organic
and Physical Chemistry imeni A. Ye. Arbuzov, Academy of Sciences USSR

"Conformation of Some Methylphenylphosphinic Acid Esters"

Abstract: The authors used the methods of IR spectroscopy and dipole moments
to study the conformation of the methyl, phenyl and para-nitrophenyl esters of
methylphosphinic acid. These compounds are characterized by stabilization
of the gauche position of the ether group relative to the phosphoryl group.
A choice between two different gauche forms cannot be made in this series of
compounds because of the closeness of the moments of the P-CH_3 and P-Ph bonds.
It is suggested that one of the causes of gauche form stability is the possi-
bility of competition between mobile electrons of the benzene ring and ether
oxygen to fill vacant 3d orbitals of the phosphorus atom.

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USSR   UDC 541.67

ISHMAYEVA, E. A., RAYEVSKIY, O. A., CHERKASOV, R. A., KHALITOV, V. V., and
PUDOVIK, A. N., Kazan' State University imeni V. I. Ulyanov-Lenin, Institute
of Organic and Physical Chemistry iemni A. Ye. Arbuzov, USSR Academy of
Sciences, Kazan'

"Estimating the Dipole Moment of the P-S Bond"

Abstract: Successful use of the dipole-moment method in structural studies
depends largely upon a rational choice of the moments of the individual
bonds. In addition, special difficulties arise in connection with calculat-
ing the dipole moments of ordinary bonds in which rotation is possible. There
is no published information on the dipole moment of the P-S bond, which,
apart from being of interest in itself, would make possible extension of use
of the dipole-moment method to the structure of organophosphorus compounds.
      The authors studied experimentally the dipole moment of 2-thiono-
2-methyl-1,3,2-dithiaphosphorine, and applied infrared spectroscopy to
determine the dipole moment of the P-S bond.
      It was found that the negative end of an ordinary P-S bond is the
phosphorus, just as it is in the case of the P-O bond. Various graphic
data on the infrared spectra of the above-noted compounds accompany the paper.
1/1

USSR   UDC 541.6:661.718.1

RAYEVSKIY, O. A., and KHALITOV, F. G., Institute of Organic and Physical
Chemistry Imeni A. Ye. Arbuzov, Academy of Sciences USSR

"Conformational Analysis in a Series of Acyl Dichlorides of Substituted
Phenylphosphoric Acids"

Abstract: In continuation of their studies on isomeric conversions or
organophosphorus compounds, an investigation was carried out of the effect
of replacement of a methyl group by a substituted or unsubstituted phenyl
group, using IR spectroscopy and dipole moment determinations. Four acid
dichlorides were studied, derived from phenylphosphoric acid (I), 2,4-dich-
lorophenylphosphoric acid (II), 4-tertbutylphenylphosphoric acid (III) and
4-nitrophenylphosphoric acid (IV). IR spectroscopy showed that in the liquid
state or in solution all of these compounds are an equilibrium mixture of
isomeric forms. Dipole moments were determined in CCl_4: (I) -- 3.38;
(II) -- 2.50; (III) -- 3.60; and (IV) -- 3.70 D. It was determined that the
trans-form is more stable than the skew form. Consequently the conjugation
energy of 2p- electrons of the ester oxygen with phosphorus 3d-orbitals is
1/2

USSR

small. It could be assumed that this is due to the chlorine atom competing
for the 3d orbitals, i.e. the 3-d orbitals of phosphorus resonate with 3p
orbitals of chlorine, decreasing considerably the 2p-3d orbital interaction.
This in turn leads to the trans-skew equilibrium rather than cis-skew,
when the methyl group at phosphorus atom is replaced by chlorine atom.

2/2

USSR

UDC 541.6+661.718.1

RAYEVSKIY, O. A., and KHALITOV, F. G., Institute of Organic and Physical Chemistry imeni A. Ye. Arbuzov, USSR Academy of Sciences

"The Conformations of Certain Derivatives of Phosphorous Acid"

Abstract: In view of earlier studies of tetracoordinated phosphorus derivatives, indicating a characteristic dynamic equilibrium of isomers, it was of interest to investigate trivalent phosphorus derivatives in this connection, for which purpose methyldichlorophosphite was studied in media of different polarity, in the temperature range from 150° to 380°K.

The dipole moment was determined experimentally, and comparison with the computed value for possible conformations led to choice of the cisscid form. Analysis of the interactions of unbound atoms supported the conclusion that this form is justified both for methyldichlorophosphite and for other derivatives of phosphorous acid.

1/1

Organophosphorous Compounds

UDC 542.91:661.718.1

USSR

GOZMAN, I. P., and RAYEVSKIY, O. A., Institute of Organic and Physical Chemistry imeni A. Ye. Arbuzov, Academy of Sciences USSR

"2-Diethylamino-4,5-dimethyl-1,3,2-dioxaphospholenes"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 7, 1971, pp. 1494-1497

Abstract: Descriptions of physical characteristics of products obtained by analyzing 2-diethylamino-4,5-dimethyl-1,3,2-dioxaphospholenes are presented. These products are assigned the structure (I).

$$CH_3-C-O \diagdown \quad \diagup OR$$
$$\qquad \| \qquad P \diagup \qquad — N(C_2H_5)_2 \quad (I)$$
$$CH_3-C-O \diagup \quad \diagdown R'$$
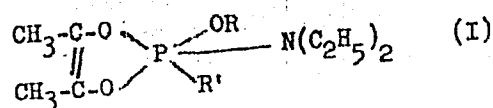
Aminodioxaphospholenes are colorless liquids, yellowing instantly on contact with air. They are completely miscible with nonpolar organic solvents and have a distinctive weak odor. Paramagnetic resonance spectra of compounds assigned structure (I) with different substituents contain a sharp singlet peak that is

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USSR

GOZMAN, I. P., and RAYEVSKIY, O. A., Izvestiya Akademii Nauk SSSR, Seriya
Khimicheskaya, No 7, 1971, pp 1494-1497

typical of a methyl at a double bond. The integral intensity of this peak
corresponds to two such methyls in the molecule. Thus these data are in agree-
ment with structure (I). This assignment was further supported by infrared
spectra of the compounds, found to have weak absorption bands at about 1740 cm^{-1}.
This band has been found to characterize tetra-substituted ethylene bonds in
dioxaphosphlenes.

2/2

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UDC 541.62:661.718.1

USSR

RAYEVSKIY, O. A., SHAGIDULLIN, R. R., and PETROVA, L. YE., Institute of Organic and Physical Chemistry imeni A. Ye. Arbuzov, Academy of Sciences USSR

"Study of Rotational Isomerism of the Acid Dichloride of Methylphosphoric Acid"

Abstract: Two physical methods were used in assigning geometrical configuration to possible rotational isomers of the acid dichloride of methylphosphoric acid (ADMPA): infrared spectroscopy and dipole moments. Infrared spectra were used to determine the existence of a dynamic equilibrium of isomeric forms and their relative proportions in a nonpolar medium. Experimental dipole moments were compared with calculated values to ascertain which isomeric forms are present in equilibrium. Absorption bands in the infrared spectra were assigned to specific isomers. A well-defined dependence of absorption band intensities on dielectric permeability of solvents led to the determination of the ratio of absolute integral band intensities caused by particular kinds of vibrations of the two isomers found to be present. The assignment of configuration was made by the dipole method. The experimental dipole moment of ADMPA in CCL$_4$ at 298°A

1/2

USSR

RAYEVSKIY. O. A., et al., Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 7, 1971, pp 1426-1429

is 3.40 ± 0.03D. The moment closest to agreement with the experimental values is observed for the equilibrium composition of 20 percent of the trans and 80 percent of the gauche forms. The low probability of configurations with layering of identically directed dipoles P-C and O-C led to the determination of one of the configurations of ADMPA being the trans-form.

USSR   UDC 547.341'139.51+547.391

PUDOVIK, A. N., BATYYEVA, E. S., SHAGIDULLIN, R. R., RAYEVSKII, O. A.,
PUDOVIK, M. A., Institute of Organic and Physical Chemistry imeni A. Ye.
Arbuzov, Academy of Sciences USSR

"Reaction of Amides of Diphenylphosphinous Acid with α, β-Unsaturated Acids"

Abstract: The mechanism of the reaction of diphenylphosphinous acid amides
with α, β-unsaturated acids was investigated. Protonation of the nitrogen
atom of the amide leads to the formation of an amine and subsequently the
amide of the unsaturated acid and diphenylphosphinous acid. Association of
the latter leads to the final product, namely β-carbamoyl-alkyl-or alkenyl-
diphenylphosphine oxide, depending on whether an α, β-unsaturated acid of the
ethylene or acetylene series was used. The proposed mechanism was confirmed
by IR spectrometry.

1/1

UDC 539.183.4+541.6:547.1'118

USSR

RAYEVSKIY, O. A., AKAMSIN, V. D., KHALITOV, F. G., DONSKAYA, YU. A., Institute of Organic and Physical Chemistry imeni A. Ye. Arbuzov of the USSR Academy of Sciences

"Dipole Moments and Conformations of Some Phosphorus Thioacid Derivatives"

Abstract: Results have been presented previously from conformational investigation of systems containing the P-O bond (O. A. Ratevskiy, et al., Izv. AN SSSSR, Ser. khim., 1725, 1970; O. A. Ratevskiy, etal., Izv. AN SSSR. Ser. khim, 2177, 1971; O. A. Rayevskiy, et al., Izv. AN SSSR. Ser. khim., 348 1972). Identification of the conformers and analysis of the factors causing energy stability of the conformers made it possible to evaluate the role of such interactions as the van der Waal's and Coulomb forces and the mutual orientation of the bonds. An analogous study has new been made of systems containing the P-S bond and the results are compared with the previous studies of the P-O bond. The dipole moments were measured for the propyl ester of diethylthiolphosphonic acid (I), the propyl ester of diethyldithiophosphonic acid (II), the dichloranhydride of methylthiolphosphoric acid (III) and the dichloranhydride of methylthiophosphoric acid (IV). A version of gosh-trans
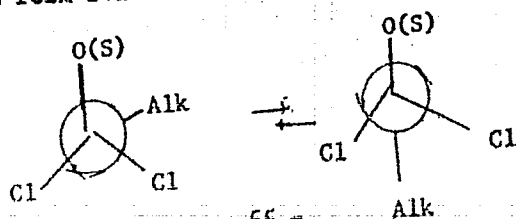
1/3

USSR

RAYEVSKIY, O. A., et al., Izvestiya Akademii Nauk SSR— Seriya Khimicheskaya, No 11, 1972, pp 2451-2454

equilibrium was established for compounds (III) and (IV). The population of conformers in the nonpolar environment is 0.8 gosh and 0.2 trans. No clear spectral signs of isomer equilibrium were observed for compounds (I) and (II). The similarity of the experimental values of the dipole moments of these com pounds calculated for the gosh-form indicates that this form is stabilized. These data indicate the energy advantage of the gosh-conformer in the case of alkyl
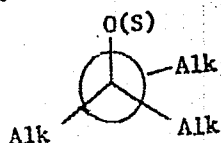
substitutions on phosphorus and realization of the thermodynamic equilibrium of the gosh and trans-form for the dichloranhydrides. With respect to the

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USSR

types of conformations there is a defined analogy with the systems containing the P-O bond. The difference in position of the conformational equilibriums for the compounds with the alkoxyl and alkthiol groups is explained by the variations and intermolecular interactions. A quantitative evaluation of the factors affecting the stabilization of the transformers indicates a decrease in the resonance component in the alkthiol group by comparison with the alkoxyl group.

RAYEVSKIY, O. A., KHALITOV, F. G., VERSHCHAGIN, A. N., VETLUZHSKIKH, I. M.,
Institute of Organic and Physical Chemistry imeni A. Ye. Arbuzov of the USSR
Academy of Sciences

"Conformational Analysis of Some Compounds Containing the $P(O)CH_2Cl$ Group"

Abstract: A study was made of six compounds containing the PCH_2Cl group: the
dichloroanhydride of chloromethylphosphonic acid (I), dimethyl (chloromethyl)
phosphine oxide (II), the methyl(chloromethyl)phosphonic acid chloride (III),
diphenyl(chloromethyl)phosphine oxide (IV), phenyl(chloromethyl)phosphonic
acid chloride (V) and phenylmethyl(chloromethyl)phosphine oxide (VI)

$$R^1 R^2 P(O)CH_2Cl$$
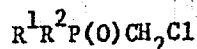
$$R^1 = R^2 = Cl \ (I); \quad R^1 = R^2 = CH_3 \ (II); \quad R^1 = Cl, \ R^2 = CH_3 \ (III);$$

$$R^1 = R^2 = C_6H_5 \ (IV); \quad R^1 = C_6H_5, \ R^2 = Cl \ (V); \quad R^1 = C_6H_5,$$
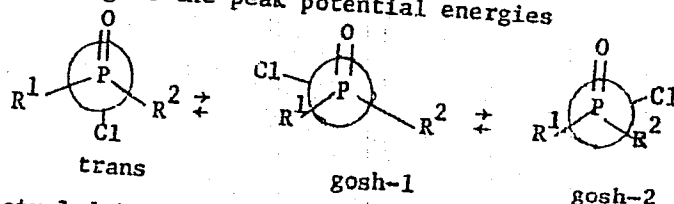
$$R^2 = CH_3 \ (VI)$$

1/2

USSR

RAYEVSKIY, O. A., et al., Izvestiya Akademii Nauk SSR -- Seriya Khimicheskaya, No 11, 1972, pp 2446-2450

On rotation around the P-C bond three positions of the C-Cl bond are possible corresponding to the peak potential energies

trans   gosh-1   gosh-2

The infrared spectral data, the dipole moments and the Kerr constant were used to investigate the spatial structure of the compounds containing the $P(O)CH_2Cl$ group. Equilibrium of the gosh and trans-conformers the position of which depends on the nature of the substitutions on the phosphorus atom is character- istic of all the investigated compounds in solution. The factors causing the energy stability of the conformers were evaluated quantitatively. In the absence of bulky substitutions the electrostatic interactions play the defining role. The frequency of the valence oscillations of the phosphoryl group depends on the spatial orientation of the irregular group.

2/2

USSR   UDC 541.124:541.67:547.1'118

RAYEVSKIY, O. A., BEL'SKIY, V. YE., ZVEREV, V. V.

"Evaluation of Effective Charges in Phosphoryl Compounds Based on Orbital Electronegativities"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 11, 1973, pp 2491-2494

Abstract: When discussing the intermolecular effects in complex organic molecules the concept of effective charges (δ) and the concept of the orbital electronegativity (χ) which is considered as the linear function of the charges on the atoms are used. The basis for the method of finding the charges in the molecule in the given paper is the principle of incomplete equilization of the electronegativities /J. F. Huheey, J. Organ. Chem., No 31, 2365, 1966/. The effective charges are found on P and O atoms of a number of symmetric phosphoryl compounds with the general formula R_3PO. In considering the nature of the phosphoryl bond, a formal path is selected with the assumption that the double bonded nature of the phosphoryl group is the result of overlap of the 3d-orbital of phosphorus and the 2p-orbital of oxygen. The charge distribution on phosphoryl group atoms in the R_3PO type compounds is tabulated. A linear relation was found between the charges on the phosphorus and oxygen atoms of
1/2

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USSR

RAYEVSKIY, O. A., et al., Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya,
No 11, 1973, pp 2491-2494

the phosphoryl group calculated on the basis of the orbital electronegativity
and the sum of the induction constants of the substitutions on the phosphorus
atom.

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USSR

RAYEVSKIY, O. A., DONSKAYA, YU. A., ANTOKHINA, L. A.

"Infrared Spectra and Internal Rotation With Respect to the P-N Bond of Some N-Arylamidodichlorophosphates"

Abstract: A study was made of the infrared spectra of compounds with the general formula $H(RC_6H_5)NP(O)Cl_2$ where $R = p-OCH_3$ (I), H(II), p-Br (III) and $p-NO_2$ (IV). According to the infrared spectral data for solutions of N-(p-methoxyphenyl)amidodichlorophosphate and N-phenylamidodichlorophosphate, conformational equilibrium is characteristic at the same time as for N-(p-Br-phenyl)amidodichlorophosphate and N-(p-NO_2-phenyl)amidodichlorophosphate, one steric structure is stabilized. It is proposed that the forms with shielding of the PO and NH bonds and their skew mutual arrangement participate in the equilibrium. The observed variations in the displacement of the conformational equilibrium as a function of the nature of the substitutions in the p-position of the benzene ring are explained by a different degree of conjugation of the nitrogen atom with the phosphorus part of the molecules.
1/1

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USSR

RAYEVSKIY, O. A., DONSKAYA, YU. A.

"Intramolecular Interactions in Phosphoryl Compounds"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 11, 1973, pp 2494-2497

Abstract: On the basis of the principle of incomplete equalization of the electronegativities, the charges on the atoms and groups of a number of phosphoryl molecules were calculated. The data obtained were compared with the experimental material on the H-bond energies with phenol.

For the OC_2H_5, OC_6H_5 and $\overline{N}(CH_3)_3\underline{7}$ substitutions, a significant role of the resonance effect on the electron density of the phosphoryl oxygen is characteristic. The conjugation is appreciably less for Cl and C_6H_5. Within the limits of error of the calculation and the experiment there is no resonance component for the SC_2H_5 and SC_6H_5 groups. The nature of variation of the dipole moments of the phosphoryl grouping under the effect of both the induction and resonance interactions of the substitutions is estimated.

1/1

USSR

UDC: 621.372.81.09

KALMYK, V. A., MARKOVA, S. A., RAYEVSKIY, S. B.

"Results of Numerical Solution of a Complex Dispersion Equation for the HE_{11} Wave in a Two-Layered Circular Waveguide"

Moscow, Radiotekhnika i Elektronika, Vol 17, No 9, Sep 72, pp 1948-1951

Abstract: Research has established the possibility that complex waves may exist in some kinds of waveguide structures, meaning waves which have complex propagation constants in spite of the absence of energy dissipation. In particular it has been found that such waves exist in a two-layered circular waveguide. Analysis of the dispersion properties of complex waves requires simultaneous solution of two complicated transcendental equations derived from the initial complex dispersion equation with a large number of parameters and additional logical conditions. In this paper the authors give the results of a numerical computer solution of the dispersion equation for the HE_{11} wave in a two-layered circular shielded waveguide for the case of complex waves.

1/1

USSR

UDC 621.372.09

RAYEVSKIY, S. B., Gor'kiy Polytechnic Institute

"Complex Waves in a Two-Layer Circular Shielded Wave Guide"

Abstract: The first results of the numerical solution of the dispersion equation for the case of complex waves propagated in a two-layer circular shielded wave guide were presented by Krohne [M. Krohne, NTZ, No 11, 655, 1969]. Here, a more detailed study is made of the dispersion properties of complex waves in this type of structure. Results are presented from solving the dispersion equation for the case of complex waves on a computer. Dispersion curves are presented which show that complex waves exist in a two-layer shielded wave guide only in the presence of a two-valued section in the dispersion characteristics of the nondamping waves. This is confirmed by the fact that all the dispersion curves of the complex waves in a wave guide with a dielectric core begin in the two-valued sections of the curves presented by G. I. Veselov [G. I. Veselov, et al., Radiotekhnika i elektronika, Vol 8, No 9, 1530, 1963]. When the dispersion characteristics of the nondamping waves do not have two-valued sections, no complex waves are detected. When the values of $\varepsilon_{1,2}$ and $\mu_{1,2}$ are close to
1/2

USSR

RAYEVSKIY, S. B., _Izvestiya vysshikh uchevnykh zavedeniy, Radiofizika_, Vol XV,
No 1, 1972, pp 112-116

limiting, the dispersion curve of the complex waves acquires a two-valued
nature. This is connected with the fact that the point at which a change in
sign of the group velocity of the nondamping waves takes place on approaching
the limiting $\varepsilon_{1,2}$ and $\mu_{1,2}$ shifts downward along the $\beta_{1,2} r_2$ axis (β is the
propagation constant along the wave guide axis and r is the shield radius).

2/2

USSR

RAYEVSKIY, S. B., SHORGONSKIY, V. Ya.

UDC: 621.372.853.1.001.5

"Analysis of the Dispersion Characteristics of an Elliptical Waveguide With a Dielectric Rod for He_{11}^e Wave"

Abstract: This paper investigates the dispersion properties of an elliptical waveguide with confocal dielectric rod for the HE_{11}^e mode. The dispersion curves calculated for such a waveguide are compared with the dispersion characteristics of a waveguide with coaxial rod. It was found that at firly high ε_1, just as in circular waveguides, the dispersion curves have a two-valued section at certain values of the parameter a_1/a_2 (where a_1 and a_2 are the semimajor axes of the rod and shield), i. e. there is anomalous dispersion.

1/1

USSR

RAYEVSKIY, S. B.

UDC: 621.372.853

"Electromagnetic Oscillations in an Open Resonator of Elliptical Profile with Dielectric"

Kiev, Izvestiya VUZ - Radioelektronika, vol. 14, No. 5, 1971, pp 483-488

Abstract: The purpose of this paper is to examine the natural two-dimensional oscillations in an open resonator of elliptical profile with a dielectric between reflectors, without taking in- to account the diffraction losses. The effect of the dielectric parameters on the resonator frequency spectrum is also assessed. In this problem, the center of the resonator is the locus of the elliptical cylinder cavity, made of a uniform dielectric, and set symmetrically with respect to the reflectors and confocally with them. Beginning with the Helmholtz equation for the poten- tial function in an elliptical coordinate system, the author ob- tains an equation for determining the characteristic resonator frequencies. This equation is especially convenient since it con- tains only elementary functions. The relative positions of the fundamental and first harmonic oscillations in the spectrum are investigated.

1/1

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USSR

RAYEVSKIY, S.B., SMORGONSKIY, V.YA.

"Dispersion Equation Of Elliptical Corrugated Waveguide"

Abstract: The paper is devoted to formulation of a dispersion equation for even HE waves in an elliptical waveguide with a rectangular corrugation. The even wave HE_{11} is the dominant wave of such a waveguide. The longitudinal and cross sections are shown of the waveguide under consideration. 1 fig. 4 ref.
Received by editors, 29 March 1971.

1/1

- 204 -

TITLE--ADHESION, ADHESIVES, AND BONDING. PRINCIPLES OF THE CLASSIFICATION, CODING, AND CONSTRUCTION OF AN INFORMATION RETRIEVAL LANGUAGE -U-

UNCLASSIFIED

PROCESSING DATE--30OCT70

AUTHOR-(02)-RAYEVSKIY, V.G., PRITYKIN, L.M.

COUNTRY OF INFO--USSR

SOURCE--PLAST. MASSY 1970, (2), 7-10

DATE PUBLISHED------70

SUBJECT AREAS--CHEMISTRY, MATERIALS, ELECTRONICS AND ELECTRICAL ENGR.

TOPIC TAGS--ADHESION, ADHESIVE, CHEMICAL BONDING, INFORMATION STORAGE AND RETRIEVAL, INFORMATION CENTER

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1992/1692

CIRC ACCESSION NO--AP0112686

STEP NO--UR/0191/70/000/002/0007/0010

UNCLASSIFIED

UNCLASSIFIED   PROCESSING DATE--30OCT70
CIRC ACCESSION NO--AP0112686
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE TERM ADHESION WAS CRIT.
   DISCUSSED WITH REF. TO DEFINITIONS GIVEN IN THE LITERATURE. ADHESIVES
   WERE CLASSIFIED ACCORDING TO THEIR ORIGIN I.E., SYNTHETIC, ELASTOMERS,
   AND NATURAL ADHESIVES. A UNIFIED CODING SYSTEM FOR ADHESIVES IS
   PROPOSED. THE SYSTEM CAN BE PROGRAMMED FOR AN INFORMATION RETRIEVAL
   UNIT AND EFFECTIVELY USED IN SOLVING MANY COMPLEX PROBLEMS.

                          UNCLASSIFIED

Acc. Nr:
AP0052536   Abstracting Service:
CHEMICAL ABST. J-7C

Ref. Code:
4P 0460 /

101359r Compatibility of poly(vinyl chloride) with butadi-
ene-acrylonitrile rubbers. Aivazov, A. B.; Mindiyarov, Kh. G.;
Zelenev, Yu. V.; Organesov, Yu. G.; Raevskii, V. G. (Mosk. Gos.
Pedagog. Inst. im. Lenina, Moscow, USSR). Vysokomol. Soedin.,
Ser. B 1970, 12(1), 10–14 (Russ). NMR spectroscopy and detn. of
the changes of the mech. loss angle in −50° to +100° interval es-
tablished that the title polymers are miscible and compatible.
At some component ratios, the mixtr. have characteristics of bi-
nary systems. The obsd. phase transitions are due to glass temps.
of poly(vinyl chloride) at high temp. and of butadiene-acryloni-
trile copolymers at low temps.
                                                                  CPJR .mc

REEL/FRAME
19821179

7

Acc. Nr:
AP0052527 Abstracting Service:
CHEMICAL ABST. *5-70*

Ref. Code:
4R0459

101607v Kinetics of water absorption by vulcanizates of elastomers. Rakaki...M. G.; Zhivova, E. A.; Vasenin, R. M.; Gul, V. E. (Mosk. Tekhnol. Inst. Myas. Moloch. Prom., Moscow, USSR). *Vysokomol. Soedin., Ser. A* 1970, 12(1), 10-19 (Russ). The kinetics of H_2O absorption of natural rubber vulcanizates (I) (smoked sheets), contg. 35 parts SKB-35 rubber and a variable content of S, thiuram, calcined MgO, $CaCO_3$, TiO_2, and kaolin, was investigated in distd. H_2O at $20 \pm 1°$. The H_2O absorption occurred in the bulk of the I. Unlike swelling, H_2O absorption was a multistage process which obeyed Fick's law at each stage and was independent of the relaxation rate. The H_2O absorbed filled the minute cracks in the polymer, which increased in dimensions following the absorption at the 2nd and the successive stages. H_2O absorption did not involve plasticization. Thus, prepn. of materials having a high resistance to nonsolvents should employ procedures giving products of min. porosity.
CKJR

REEL/FRAME
19821170

Rubber and Elastomers

USSR

RAYEVSKIY, V. G., and PRITYKIN, L. M.

"Adhesion, Glues, Cementing. Principles of Classification, Coding, Formation, and Information-Search Language, Terminology"

Moscow, Plasticheskiye Massy, Vol 2, 1970, pp 7-10

Abstract: The authors discuss the problem of coding for various types of glues which should reflect their origin, type, application, etc. They treat adhesion as a surface phenomenon encompassing physical or chemical inter- action between the surface molecules of condensed phases. The authors pro- pose a classification of glues into: synthetic, resins, and natural. The synthetic glues are subdivided into solid and liquid, with further breakdown of the solid glues into films and powders, and of the liquid ones into: inert solvent type, active solvents, monomers, oligomers, and dispersion types, and the natural glues - into those of plant origin and animal origin. On this basis codes are proposed for glue nomenclature which would reveal some of the classification properties. Finally, a rather complex information- search system for glues, adhesion, and cementing is proposed consisting of 39 information cells, with proper UDC numbering system.
1/1

172   013

TITLE--THE ACETYLCHOLINESTERASE ACTIVITY IN CAUDAL REGIONS OF THE MEDULLA
OBLONGATA -U-

UNCLASSIFIED

PROCESSING DATE--13NOV70

AUTHOR--RAYGORODSKAYA, I.G.

COUNTRY OF INFO--USSR

SOURCE--BYULLETEN' EKSPERIMENTAL'NOY BIOLOGII I MEDITSINY, 1970, VOL 49,
NR 6, PP 102-106
DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--BRAIN, MEDULLA, HISTOCHEMISTRY, ACETYLCHOLINESTERASE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3004/0572

STEP NO--UR/0219/70/049/006/0102/0106

CIRC ACCESSION NO--AP0131195

UNCLASSIFIED

PROCESSING DATE--13NOV70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. DURING HISTOCHEMICAL DETECTION OF ACETYLCHOLINESTERASE IN DIFFERENT MORPHOLOGICAL STRUCTURES OF THE MEDULLA OBLONGATA (IN MICROCELLULAR, VENTRAL AND GIANT CELL RETICULAR NUCLEI, IN SPINAL AND MEDIAL VESTIBULAR NUCLEI AND IN THE REGION OF THE SINGLE GANGLION) THE AUTHOR ESTABLISHED A DISSIMILAR CHOLINESTERASE ACTIVITY FOR EACH OF THE NUCLEI INVESTIGATED. IN RETICULAR NUCLEI A HIGH CHOLINESTERASE ACTIVITY WAS MAINLY OBSERVED IN BORDER LINE ZONES. THE TOPOGRAPHIC SCHEMES OF LOCALIZATION OF ACTIVE ACETYLCHOLINESTERASE IN DIFFERENT REGIONS OF THE MEDULLA OBLONGATA WERE COMPARED. ACCORDING TO DATA OF MICROSCOPIC INVESTIGATION OF DIFFERENT LEVELS OF RETICULAR NUCLEI THE AUTHOR COMPILED SCHEMES OF LOCALIZATION THEREIN OF CELLS POSSESSING CHOLINESTERASE ACTIVITY. FACILITY: FIRST LENINGRAD I. P. PAVLOV MEDICAL INSTITUTE.

USSR

KIREYEV, V. V., KOLESNIKOV, G. S. (deceased), RAYGORODSKIY, I. M., and
OKULEVICH, P. O., Moscow Institute of Chemical Technology imeni D. I.
Mendeleyev

UDC 546.185+547.245

"Reaction of Alkoxycyclophosphazenes With Chloromethylorganosilanes"

Abstract: The reaction course was measured by the amount of the chloride
evolved butyl. The following starting materials were used: hexabutoxycy-
clotriphosphazotriene, triphenoxytributoxycyclotriphosphazotriene, chloro-
methyltributoxysilane, chloromethylmethyldibutoxysilane, chloromethylmethyl-
phenylsilane, and chloromethyltributylsilane. The products were shown to
contain the P-O-CH₂Si≤ group. It was proposed that the reaction takes
place via ionization of the P-O-R bond in alkoxycyclophosphazene followed
by a nucleophilic attack of the phosphazonium ion on chloromethyltriorgano-
silance.

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USSR

RAYKERUS, P. A.

UDC: None

"Currents in Dielectrics Limited by Space Charge With the Frenkel Effect Taken Into Account, for Single-Energy Traps of Arbitrary Depth"

Leningrad, Fizika i tekhnika poluprovodnikov, No 12, 1972, p 2414

Abstract: This item is the summary of a deposited article discussing the computation of volt-ampere characteristics by the parametric method. At low voltages, the space charge is distributed over the whole dielectric and the characteristic does not conform to the Frenkel-Pool law. With increasing voltage the space charge increases but its "center of gravity" shifts to the cathode. This shift is determined by the closeness of the field to the cathode and the constancy of the trap depth. For deep traps the current is determined only by a reduction in the trap depth by the electric field.

1/1

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UNCLASSIFIED

TITLE--DETERMINATION OF THE PARAMETERS REPRESENTING THE EVAPORATION OF METAL PARTICLES IN AN ARC PLASMA -U-

AUTHOR-(02)-LUZHNOVA, M.A., RAYKHBAUM, YA.D.

COUNTRY OF INFO--USSR

SOURCE--INZH.-FIZ. ZHUR., JAN. 1970, 18 (1), 77-81

DATE PUBLISHED----JAN70

PROCESSING DATE--09OCT70

SUBJECT AREAS--MATERIALS, PHYSICS

TOPIC TAGS--ELECTRIC ARC, EVAPORATION, BIBLIOGRAPHY, SPECTROSCOPY, SPHERIC METAL POWDER, BISMUTH ALLOY, LEAD ALLOY, TIN ALLOY, SILVER ALLOY, PLASMA ARC

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1995/0206

CIRC ACCESSION NO--AP0115910

STEP NO--UR/0170/70/018/001/0077/0081

UNCLASSIFIED

CIRC ACCESSION NO--AP0115910   UNCLASSIFIED   PROCESSING DATE--09OCT70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE EVAPORATION OF SPHERICAL METAL PARTICLES (BI, PB, SN, AG, ETC.) IN THE PLASMA OF A D.C. ARC BURNING BETWEEN C ELECTRODES WAS STUDIED SPECTROSCOPICALLY AND BY AN X RAY ABSORPTION METHOD. THE EVAPORATION PARAMETERS OBTAINED FOR BI, PB, SN, AND AG AGREED CLOSELY WITH THOSE CALCULATED THEORETICALLY ON THE ASSUMPTION THAT HEAT TRANSFER TO THE PARTICLES WAS MAINLY GOVERNED BY THERMAL CONDUCTION PROCESSES. THE EXPERIMENTALLY MEASURED TOTAL EVAPORATION TIME, HOWEVER, WAS 35PERCENT GREATER THAN THE VALUE CALCULATED ON THE ASSUMPTION THAT THE EVAPORATION OF THE PARTICLES OBEYED THE SREZNEVSKY LAW. THIS DIFFERENCE WAS ATTRIBUTED TO THE EFFECTS OF THE TRANSITIONAL (TRANSIENT) STAGE OF EVAPORATION.

UNCLASSIFIED

BABSKIY, Ye. B., RAYKHBAUM, Ye. Ya.

"Mathematical Model of Changes in Action Potential Length of Fibers of the Myocardium in the Process of Assimilation of a Rhythm"

Upr. i Inform. Protsessy v Zhivoy Pripode [Control and Information Processes in Living Nature -- Collection of Works], Moscow, Nauka Press, 1971, pp 182-188, (Translated from Referativnyy Zhurnal, Kibernetika, No 3, 1972, Abstract No 3 V592 by V. Mikheyev).

Translation: A mathematical model is studied of changes in the duration of action potential (AP) of fibers of the myocardium during the process of increasing the frequency of heart contraction (frequency phenomenon). The initial assumption used to explain the frequency phenomenon is the statement that the kinetics of the reactions participating in the generation of the AP and restoration of initial values of conductivity is described by a first order equation such as

$$\partial y_i / \partial t = y_{i0\nu} - y_i (d_i + \beta_i),$$

where α_1 and β_j are the rate constants of certain hypothetical reactions determining the kinetics of changes in y_i; y_i is the instantaneous value of

1/2

BABSKIY, Ye. B., RAYKHBAUM, Ye. Ya., Upr. i Inform. Protsessy v Zhivoy Pri-
pode, Moscow, Nauka Press, 1971, pp 182-188.

certain dimensionless functions m, h and n, characterizing changes in conduc-
tivity of ions during the excitation cycle; y_{i00} is the stable value of these
functions. Restoration of the initial values of conductivity is characterized
by the restoration time, meaning the interval between the end of each AP and
the moment of development of the subsequent AP. It is concluded that regula-
tion of AP length in the process of assimilation of rhythm is achieved by the
two components A(C), the function of restoration time, and $B(t_r)$, the function
of restoration, as well as the phase relationship between them and the possi-
ble influence of changes in ion concentration gradients on these components.
It is noted that one task for further investigation is clarification of the
physical and chemical nature of these components and testing of the regulari-
ties produced on other biological objects in which the length of the excitation
period is changed during assimilation of a rhythm.

2/2

- 80 -

USSR

RAYKHER, YE. M. and BASHKIN, YE. A.

UDC 531.715

"Photoelectric Tolerance Monitor"

Translation: A photoelectric tolerance monitor is proposed which contains a mirror measuring device consisting of an illuminator, photodetector, a mirror measuring device consisting of an illuminator, photodetector, a mirror angle of rotation depends on variations in the measured quantity and the directed beam from illuminator to photodetector, and an electronic unit for processing signals from the photodetector. The monitor also contains a reference scale and an assembly for adjusting for appropriate tolerance limits, mounted in the path of the ligh beams from the rotating mirror to the photodetector. For the purpose of automating the monitoring process, the assembly for adjust- ing the appropriate tolerance limits takes the form of an immobile mirror and, mounted in front of it, a program carrier which is moved during a change in the tolerance limits and is immobile during monitoring. 3 illustrations.

1/1

1/2   022

UNCLASSIFIED

TITLE--MECHANICAL PROPERTIES OF NUCLEUS PULPOSUS OF THE LUMBAR INVERVERTEBRAL DISCS BASED ON DATA OF BARODISCOMETRY IN EXPERIMENT -U-

PROCESSING DATE--13NOV70

AUTHOR-(04)-TSIVYAN, YA.L., RAYKHINSHTEYN, V.KH., MOSOLOVA, M.D., OVSEYCHIK, YA.G.

COUNTRY OF INFO--USSR

SOURCE--ORTOPEDIYA, TRAVMATOLOGIYA I PROTEZIROVANIYE, 1970, NR 6, PP 55-60

DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES, BEHAVIORAL AND SOCIAL SCIENCES

TOPIC TAGS--BONE DISEASE, ORTHOPEDIC SURGERY, MEDICAL TRAINING

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3003/0915

STEP NO--UR/9115/70/000/006/0055/0060

CIRC ACCESSION NO--AP0129980

UNCLASSIFIED

UNCLASSIFIED

CIRC ACCESSION NO--AP0129980

PROCESSING DATE--13NOV70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. IN THIS PAPER THE RESPONSE OF THE
INTERVERTEBRAL LUMBAR DISCS TO EXPERIMENTAL VERTICAL COMPRESSION IS
ELUCIDATED. THE OBJECT OF THE STUDY WAS CADAVERIC MATERIAL. VARIOUSLY
TREATED PREPARATIONS OF THE HUMAN LUMBAR SPINE WERE SUBMITTED TO
COMPRESSING LOAD IN A SPECIALLY CONSTRUCTED APPARATUS. BARODISCOMETRY,
PRESSURE IN NUCLEUS PULPOSUS OF THE DISC UNDER STATIC CONDITIONS WAS
CHOSEN AS BASIC TEST. INFORMATION ABOUT THE INTRADICAL PRESSURE WAS
OBTAINED WITH AID OF A SPECIAL DEVICE, NEEDLE PROBE OF ORIGINAL
CONSTRUCTION. DISCS OF VARIOUS DEGREE OF DEGENERATION HAVE BEEN
INVESTIGATED. ON BASIS OF THE EXPERIMENTS THE AUTHORS PROPOSE A
CONCEPTION OF THE AMORTIZATION FUNCTIONS OF LUMBAR INTERVERTEBRAL DISCS.
    FACILITY: KLINIKI TRAVMATOLOGII I ORTOPEDII I OTDELA FIZIOLOGII
NOVOSIBIRSKOGO INSTITUTA TRAVMATOLOGII I ORTOPEDII.

UNCLASSIFIED

UNCLASSIFIED   PROCESSING DATE---09OCT70

1/2   032
TITLE---CLINICO ELECTROENCEPHALOGRAPHIC PARALLELS IN EPILEPTIFORM
SYNDROMES, DUE TO SEVERE CHRONIC ALCOHOLIC INTOXICATION -U-
AUTHOR-(02)-BERGELSON, N.M., RAYKHINSTEYN, V.KH.

COUNTRY OF INFO---USSR

SOURCE---ZHURNAL NEVROPATOLOGII I PSIKHIATRII IMENI S. S. KORSAKOVA, 1970,
VOL 70, NR 5, PP 731-736
DATE PUBLISHED------70

SUBJECT AREAS---BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS---ELECTROENCEPHALOGRAPHY, EPILEPSY, ALCOHOL, ENCEPHALITIS,
BRAIN, CEREBRAL CORTEX

CONTROL MARKING---NO RESTRICTIONS

DOCUMENT CLASS---UNCLASSIFIED
PROXY REEL/FRAME--1994/1124   STEP NO--UR/0246/70/070/005/0731/0736

CIRC ACCESSION NO--AP0115143
                              UNCLASSIFIED

CIRC ACCESSION NO--AP0115143

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE AUTHORS ANALYZE THE CLINICAL AND EEG DATA IN 40 PATIENTS WITH CHRONIC ALCOHOLISM AND EPILEPTIFORM SYNDROMES AND IN 10 ALCOHOLICS WITHOUT SEIZURES. IT WAS POSSIBLE TO ESTABLISH 3 MAIN TYPES OF EEG CHANGES: 1) RELATED TO TOXIC ENCEPHALITIS: 2) REFLECTING THE DYSFUNCTION OF DEEP MIDDLE BRAIN STRUCTURES; 3) CORTICAL FOCI IRRITATION. THE LATTER TYPE OF CHANGES WAS SEEN ONLY IN PATIENTS WITH CONVULSIVE SEIZURES. THE 2 FORMER GROUPS WERE CHARACTERIZED BY PATIENTS WITH ALCOHOLISM IN GENERAL.
FACILITY: KAFEDRA PSIKHIATRII NOVOSIBIRSK MEDITSINSKOGO INSTITUTA AND OTDEL FIZIOLOGII.   FACILITY: NOVOSIBIRSK N I INSTITUTA TRAVMATOLOGII I ORTOPEDII.

UNCLASSIFIED

USSR

UDC 911.3.616.986.7(571.14)

CHULOVSKIY, I. K., RAYKHLIN, M. L., and KOVALERCHIK, R. Ya.

"Leptospirosis in Novosibirskaya Oblast"

V sb. Vopr. infekts. patol. (Problems of Infection Pathology -- collection of works) Vyp. 2. Omsk, 1970, pp 144-147 (from RZh-Meditsinskaya Geografiya, No 4, Apr 71, Abstract No 4.36.87)

Translation: Over a 20-year period (1946-1965) there were 901 cases of leptospirosis registered in the oblast. In 1946-1957 Leptospira hebdomadis and grippotyphosa sero-groups prevailed. Later L. pomona prevailed with concurrent increase in the role of anthropurgic foci.

1/1

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USSR   UDC 911.3.616.986.7(571.14)

RAYKHLIN, M. I., CHULOVSKIY, I. K., and ALPATOVA, G. N.

"Problem of Sporadic Leptospirosis Incidence Among the Population of the Kolyvanskiy Rayon in Novosibirskaya Oblast"

V sb. Vopr. infekts. patol. (Problems of Infection Pathology -- collection of works) Vyp. 2. Omsk, 1970, pp 148-149 (from RZh-Meditsinskaya Geografiya, No 4, Apr 71, Abstract No 4.36.88)

Translation: In 1968, 32 population points where leptospirosis was not recorded were studied retrospectively. Blood serum was investigated in 147 people who had suffered febrile disease similar clinically to leptospirosis in the May-September period. In 37 cases serum was found containing antibodies to Leptospira of serogroups: pomona, australis, bataviae and tarassovi in 1:100-1:1,000 titers.

1/1

TITLE--HISTOCHEMICAL FEATURES OF THE ASHKENAZY (HUERTHLE) CELLS AND THEIR
  POSSIBLE ROLE IN THE FUNCTIONING OF THE THYROID GLAND -U-

AUTHOR-(02)-RAYKHLIN, N.T., SMIRNOVA, YE.A.

COUNTRY OF INFO--USSR

SOURCE--TSITOLOGIYA 1970, 12(2), 287-97

DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--THYROID GLAND, CARCINOMA, HISTOCHEMISTRY, ENZYME ACTIVITY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1997/2035   STEP NO--UR/9053/70/012/002/0187/0197

CIRC ACCESSION NO--AP0120678
                                    UNCLASSIFIED

CIRC ACCESSION NO--AP0120678

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. TWENTY-EIGHT ADENOMAS AND 32
CARCINOMAS OF THE THYROID GLAND WERE HISTOCHEM. EXAMD.   THE FOLLOWING
ENZYMES WERE DETECTED: DEHYDROGENASES OF THE KREBS CYCLE, LACTIC
DEHYDROGENASE, ALPHA-GLYCEROPHOSPHATE DEHYDROGENASE, DEHYDROGENASES OF
THE PENTOSE CYCLE, GLUTAMIC ACID DEHYDROGENASE, NAD AND NADP
DIAPHORASES. THE HISTOCHEM. PROPERTIES OF THE FOLLICULAR AND HUERTHLE
CELLS WERE DESCRIBED.   THE ACTIVITY OF THE OXIDOREDUCTIVE ENZYMES IN
THE HUERTHLE CELLS WAS VERY HIGH. THERE WERE NO LOCALIZED DIFFERENCES
IN THEIR PROPERTIES. THE BEST DIFFERENTIATION AGAINST FOLLICULAR CELL:
WAS OBSD. WITH SPECIMENS TESTED FOR ISOCITRIC AND SUCCINIC ACID
DEHYDROGENASES. THE HIGH METABOLIC ACTIVITY OF THE HUERTHLE CELLS DID
NOT PERMIT CONSIDERATION OF THESE CELLS AS REGRESSIVE TYPES.   THE
ONCOCYTIC CELL SYSTEM IN THE WHOLE ORGANISM APPARENTLY PLAYS AN
IMPORTANT COMPENSATORY ROLE IN HOMEOSTASIS.   FACILITY: LAB.
HISTOCHEM. ELECTRON. MICROSCOPY, INST. EXP. CLIN. ONCOL., MOSCOW, USSR.

UNCLASSIFIED

1/2   019   UNCLASSIFIED   PROCESSING DATE--16OCT70
TITLE--CYTOCHEMICAL STUDY OF THE PHAGOCYTOSIS OF QUARTZ DUST UNDER THE
   EFFECT OF HYDROCORTISONE -U-
AUTHOR-(02)-RAYKHLIN, N.T., SHNYDMAN, I.M.

COUNTRY OF INFO--USSR

SOURCE--BYULLETEN' EKSPERIMENTAL'NOY BIOLOGII I MEDITSINY, 1970, VOL 69,
   NR 5, PP 106-108
DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--WHITE RAT, PERITONEUM, MITOCHRONDRION, DEHYDROGENASE,
   PHOSPHATASE, PHAGOCYTOSIS, HYDROCORTISONE, LUNG, RESPIRATORY SYSTEM
   DISEASE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1998/0199   STEP NO--UR/0219/70/069/005/0106/0108

CIRC ACCESSION NO--AP0120897
------------------------------UNCLASSIFIED------------------------------

CIRC ACCESSION NO--AP0120897
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. IN ALBINO RATS 24, 48 AND 72 HOURS
  AFTER INJECTION INTO THE PERITONEAL CAVITY OF 100 MG OF QUARTZ DUST WITH
  THE AID OF CYTOCHEMICAL REACTIONS TO SOME MITOCHONDRIAL (NAD,DIAPHORASE
  AND SUCCINIC DEHYDROGENASE) AND LYSOSOMAL (ACID PHOSPHATASE) ENZYMES THE
  AUTHORS INVESTIGATED THE PHAGOCYTOSIS OF THE LATTER IN CONDITIONS OF
  ADDITIONAL EFFECT OF HYDROCORTISONE. ON THE BASIS OF THE DATA DERIVED A
  SUPPOSITION IS SET FORTH TO THE EFFECT THAT HYDROCORTISONE IS,
  APPARENTLY, CAPABLE TO STABILIZE LYSOSOMAL AND MITOCHONDRIAL MEMBRANES
  AND THUS DELAY THE DEATH OF CONIOPHAGE. THE MATERIAL IS DISCUSSED IN
  THE LIGHT OF PREVIOUSLY OBTAINED RESULTS ON THE INHIBITING INFLUENCE OF
  HYDROCORTISONE ON COLLAGENOGENESIS IN THE LUNGS IN EXPERIMENTAL
  SILICOSIS AND THE DATA OF OTHER AUTHORS CONCERNING CERTAIN OTHER
  MECHANISMS OF HYDROCORTISONE EFFECT ON THE CELL.   FACILITY:
  INSTITUTE OF EXPERIMENTAL AND CLINICAL ONCOLOGY OF THE ACADEMY OF
  MEDICAL SCIENCES OF THE USSR, MOSCOW.   FACILITY: KASAKH INSTITUTE
  OF INDUSTRIAL HYGIENE AND OCCUPATIONAL DISEASES.

UNCLASSIFIED

UDC: 621.374.5

USSR

RAYKHLIN, V. A., Active Member of the Scientific and Technical Society of Radio Engineering, Electronics and Communications imeni A. S. Popov

"Simple Corrected Delay Lines With High-Quality Transfer Characteristics"

Moscow, Radiotekhnika, Vol 25, No 12, Dec 70, pp 59-69

Abstract: The author considers homogeneous delay lines in which each link contains no more than one inductance coil. The optimum types of the simplest corrected links are found with respect to the quality of the transfer characteristic of the line. As a basis for solution of the problem, the author proposes development of the concept of group delay as applied to this particular case. Estimates are found. In essence, cascade connection of two simple π-links is taken as the initial structure to be corrected. In addition to solving the basic problem, a convenient three-dimensional interpretation of the correction problem is derived. By passing from one plane to another, all possible modifications of the simplest corrected links may be traced. The best solutions for links with mutual inductance and correcting capacitance may be recommended for practical application where specified conditions of optimality are satisfied.

1/1

I Major Problems of Qualimetry.

Azgal'dov, G. G.; Raykhman, E. P.

The authors single out a number of the most important theoretical problems of qualimetry, arranged in the order of their appearance in the solution of practical problems of estimating the quality of whatever objects.

REEL/FRAME
19760235

USSR

ALFIMOVA, YE. YA., KOL'TOVER, V. K., and RAYKHMAN, L. M., Branch of the Institute of Chemical Physics, Academy of Sciences USSR, Chernogolovka (Moscow Oblast)

"Luminescent Probe Study of Conformation Changes in Endoplasmic Reticulum Membranes"

Abstract: The dye 1-aniline-8-naphthalene sulfate (ANS) whose fluorescence varies with the degree of hydrophoby of the surrounding medium was used to detect and study conformation changes in microsomal membranes of liver cells induced by alterations in the ionic composition and temperature. Calcium in low concentrations (1 to 3 mM) markedly increased the intensity of fluorescence of the microsomes produced by the dye and the corresponding curve was more distinctly S-shaped than the curves reflecting the addition of other cations. The latter in large concentrations (100 mM or more) intensified the fluorescence of the dye bound with the microsomes due to interaction with the lipid components of the membranes. Analysis of the temperature factor revealed the thermal structural changes characteristic of cooperative systems.

1/1

Biochemistry

USSR

UDC: 612.015.1:543.42

KOL'TOVER, V. K., RAYKHMAN, L. M., YASAYTIS, A. A., and BLYUMENFEL'D, L. A.,
Institute of Chemical Physics, USSR Academy of Sciences, and Moscow State
University imeni M. V. Lomonosov

"ATP-Induced Conformation Changes in Mitochondrial Membranes Investigated by
the Method of Spin Probing"

Abstract: It is generally believed that oxidative phosphorylation in mito-
chondria is accompanied by changes in the conformation of the corresponding
enzyme systems. However, the occurrence of these changes has never been
definitively proven. The object of this study was to detect -- by means of
spin probing with neutral, nonpolar molecules -- conformation changes in mito-
chondrial membranes and submitochondrial particles during their activation with
ATP. The study material was obtained from cattle hearts; the test substance,
a radical, was of synthetic origin. The results of spectrographic analysis
showed increased solubility of the radical after addition of ATP, which in-
dicated conformation changes in membrane lipoproteins. Furthermore, a lowered
pH produced similar spectral changes, suggesting that an increased concentra--

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USSR

KOL'TOVER, V. K., et al, Doklady Akademii Nauk SSSR, Vol 197, No 1, 1971, pp 219-222

tion of protons can induce conformation changes in which the number of nonpolar groups on the "exposed" portion of the mitochondrial lipoproteins increases.

2/2

RAYKHMAN, S. P.

JPRS 58457

13 May 73

13 March 1973

UDC: 614.895.5:613.081

PRINCIPLES OF STANDARDIZING THE MICROCLIMATE OF INDIVIDUAL GAS-DEFENSE DEVICES

[Article by Professor S. P. Raykhman, Candidate of Biological Sciences, G. V. Bavro, Doctor of Medical Sciences, Ye. I. Krausia, Candidate of Medical Sciences, N. V. Plotnikova and P. P. Ryabinin: "Principles of Standardizing the Microclimate of Individual Gas-Defense Devices"; Moscow, Gigiyena i Sanitariya, Russian, No. 1, 1973, submitted to press 6 April 1972, pp 45-49]

In ensuring safe working conditions at enterprises of the chemical, mining, petroleum, atomic, and other branches of industry, as well as in the exploration of underwater areas and outer space an important role is played by individual gas-defense devices.

This report will examine questions concerning the setting of norms for parameters of the space under the suit connected with insurance of normal thermal homeostasis of the organism. The urgency of these questions is conditioned by the fact that one of the main factors leading to a decline in working ability and a decrease in the duration of work in individual gas-defense devices consists of a change in heat exchange conditions between the organism and the surrounding medium.

On the basis of our own data contained in literature (L. S. Landorf, et al.; I. I. Kitcharini S. M. Gorodinskiy, et al., 1969,1970) in the setting of norms for microclimatic parameters it appears to be justified to make to a certain degree a conditional division of functional states of the organism into optimal, permissible, and maximal. The microclimatic conditions in the space under the suit can also be divided into three zones corresponding to these states.

Optimal microclimatic conditions are considered to be those which ensure the preservation of the thermal balance without a pronounced strain- ing of physiological thermoregulation mechanisms (table 1). These conditions presuppose the absence of an influx of heat from the outside with optimal structure of heat emission (Candrer et al.; A. A. Butlova; L. Oppl and R. Yokl; N. K. Vitte; P. I. Kolesnikov). The speed of air movement is considered to be equal to 0.2-0.3 meters/second, inasmuch as even in suits with forced ventilation as a rule it does not exceed these values. With an optimal microclimate of gas-defense devices for individual protection the duration of their wear is determined not by the thermal state of the organism, but by

- 1 -   II - USSR - C.

Table 1
Parameters of the Microclimate Under the Suit and Functional Shifts in the Organism Conditioned by It

(1)	(2) Охлаждение		(7) Г·%	(8)	(3)		(7)	(8)	(4)	(6) (7)	(8)
Микроклиматические условия и функциональные состояния организма	(5) Тяжелая работа	(6) Работа средней интенсивности			(5)	(6)	(7)	(8)	(5)		
(9) Ректальная температура (в градусах)	37,7—37,8	37,4—37,6	37,0—37,4	36,8—37,2		38,0	37,4	37,6		38,3	38,3
(10) Средняя температура тела (в градусах)	35,4—35,7	35,5—35,9	35,5—36,0 29—31	35,6—36,2	38,5	37,1	37,2				37,9
(11) Теплосодержание (в ккал/кг)											
(12) Частота сердечных сокращений (уд. в мин)	130—140 270—300	110—170 150—200	90—100 100—150	50—75 50—75			90	97			103
(13) Генерация влаги (г/час)		15—27 14—25 13—23	21—31 20—27 18—27	27—33 15—31 23—29		29 27 33	35	40 31 36		32 25 31	50 45 65
(14) Температура подкостюмного воздуха при влажности:											

Key:

1. Microclimatic conditions and functional states of the organism
2. Optimal
3. Permissible
4. Maximal
5. Heavy work
6. Work of average intensity
7. Light work
8. Rest

9. Rectal temperature (in degrees)
10. Average body temperature (in degrees)
11. Heat content (in kcal/kg)
12. Rate of heart contractions (beats per minute)
13. Generation of moisture (grams/hour)
14. Temperature of air under suit with humidity of:
15. Up to

Note: Generation of heat in the performance of heavy work is 4-6.5 kcal/min., work of average intensity -- 3.5-6 kcal/min., light work -- 2-3.5 kcal/min., and in the state of rest -- 1.3-1.5 kcal/min.

fatigue whose rate of development depends on the regime and character of work, the production situation and so on. Maintenance of an optimal microclimate in individual gas-defense devices, as a rule, requires the elimination of heat with the aid of artificial heat regulating systems. The use of liquid cooled suits appears to be the most effective from a physiological-hygienic viewpoint and most promising with regard to practical realization (Shirova and Nichels; Howard and Systems; Hannelsy; C. H. Corodinsky, et al., 1970). Liquid cooled suits ensure the elimination of heat primarily by the conductive method. That is why when they are used the basic indexes subject to normalization, consist of the parameters of the heat carrier flowing along tubes in contact with the body of the suit. Inasmuch as with the conductive method of heat removal there is an intensive cooling of the body "shell," optimal thermal state of the organism is ensured with a higher temperature of the "nucleus" (Table 2). In case of the performance of work limited in duration or epi- sodic operations it is permissible to aim not only at an optimal microclimate of the space under the suit, but also at microclimatic conditions with which not all of the heat produced by the body is eliminated. In this case as well, however, it is necessary to ensure a thermally stable state of the of the organism even with its higher thermal content.

Table 2

(1) Parameters	(2) ...	...	...	...
(6) ... temperature in °C	34.0-34.2	37.7 37.9	37.5 - 3.4	37.0-37.4
(7) ...	27.0-29.0	35.0 ...	...0 -31.0	31.0-32.0
(8) ...	120-200	100 ...	50. 100	40-60
(9) ...	150-110	110-120	90 - 100	50-75
(10) ...	8-10	12-15	18-22	26-29
(11) ...				

Key:

1. Index
2. Heavy work
3. Work of average intensity
4. Light work
5. Rest
6. Rectal temperature (in degrees)
7. Average temperature of the skin (in degrees)
8. Heat content (in kcal/kg)
9. Generation of moisture (grams/hour)
10. Rate of heart contractions (beats per minute)
    - temperature of coolant at the input of the liquid cooled suit (in degrees)
    - temperature of coolant at cooled suit (in degrees)
    - (expenditure around 100 liters/hour)

Microclimatic conditions ensuring a thermally stable state of the organ- ism during the accumulation of heat not exceeding 1.5 kcal/kg are considered permissible by us (See Table 1). At the same time there is observed a

- 3 -

USSR

RAYKHMAN, Ya. A., et al., Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy,
Tovarnyye Znaki, No 22, Aug 72, Author's Certificate No 298936, filed 8 Aug 68,
published 14 Jul 72, p 249

to the input of the memory device, and the second outputs are connected to
the first inputs of the first and second comparison circuits respectively.
The second inputs of these comparison circuits are connected to the outputs
of the address registers for the given X and Y coordinates, and the outputs
are connected to the first inputs of the modules for transfers along X and Y.
The second output of the module for transfers along X is connected to the
second input of the module for transfers along Y and vice versa. The third
inputs of both transfer modules are connected to the corresponding outputs
of the point analysis circuit, and the third outputs are connected to the
inputs of the point recording circuit, whose output is connected to the first
input of the point register, which is connected to the memory device and to
the circuit grouping block whose output is connected to the point analysis
input. 2. A modification of this computer distinguished by the fact that
the functional possibilities of the machine are extended by adding a coordi-
nate register, boundary decoder, logic operations module and circuit suita-
bility decoder to the circuit grouping block. The first output of the
2/3

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USSR

RAYKHMAN, Ya. A., et al., Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 22, Aug 72, Author's Certificate No 298936, filed 8 Aug 68, published 14 Jul 72, p 249

suitability decoder is connected to the first input of the logic operations module whose outputs are connected to the corresponding inputs of the coordinate register, while the second inputs are connected to the outputs of the boundary decoder. The inputs of the boundary decoder are connected to the outputs of the coordinate register, and the second output of the suitability decoder is connected to the input of an element counter whose outputs are connected to the address register of the memory device.

3/3

Computers: Digital

USSR   UDC 681.323

RAYKHMAN, Ya. A., RUDKO, V. A., BUTKOV, Yu. G., FURMAN, N. A., and KOZLOV, V. A.

"A Specialized Digital Computer for Calculating the Interconnections of Integrated Systems"

Moscow, Oktrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 22, Aug 72, Author's Certificate No 298936, filed 8 Aug 68, published 14 Jul 72, p 249

Translation: This Author's Certificate introduces: 1. A specialized digital computer for calculating the interconnections of integrated systems. The computer contains a memory device, address registers for given and current coordinates, comparison circuits, registers for points, an analysis circuit, a recording circuit, and an input/output module. As a distinguishing feature of the patent, speed is increased and the device is simplified by adding a block for transfers along X and Y and a circuit grouping block with its output connected to the first inputs of the address register for current X and Y coordinates, whose second inputs are connected to the first outputs of the blocks for transfers along X and Y respectively. The first outputs of the current coordinate registers are connected through a converter 1/3

USSR

RAYKHMAN, Ya. A., et al., Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 22, Aug 72, Author's Certificate No 298936, filed 8 Aug 68, published 14 Jul 72, p 249

to the input of the memory device, and the second outputs are connected to the first inputs of the first and second comparison circuits respectively. The second inputs of these comparison circuits are connected to the outputs of the address registers for the given X and Y coordinates, and the outputs are connected to the first inputs of the modules for transfers along X and Y. The second output of the module for transfers along X is connected to the second input of the module for transfers along Y and vice versa. The third inputs of both transfer modules are connected to the corresponding outputs of the point analysis circuit, and the third outputs are connected to the inputs of the point recording circuit, whose output is connected to the first input of the point register, which is connected to the memory device and to the circuit grouping block whose output is connected to the point analysis input. 2. A modification of this computer distinguished by the fact that the functional possibilities of the machine are extended by adding a coordinate register, boundary decoder, logic operations module and circuit suitability decoder to the circuit grouping block. The first output of the
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USSR

RAYKHMAN, Ya. A., et al., Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 22, Aug 72, Author's Certificate No 293936, filed 8 Aug 68, published 14 Jul 72, p 249

suitability decoder is connected to the first input of the logic operations module whose outputs are connected to the corresponding inputs of the coordinate register, while the second inputs are connected to the outputs of the boundary decoder. The inputs of the boundary decoder are connected to the outputs of the coordinate register, and the second output of the suitability decoder is connected to the input of an element counter whose outputs are connected to the address register of the memory device.

3/3

USSR   UDC: 621.396.6-181.5(088.8)

GLAZKOV, I. M., ZAYTSEV, V. A., KOZLOV, V. A., RAYKHMAN, Ya. A., TRYAKOV,
E. N.

"A Microphoto Assembly Device for Making Phototemplates"

Translation: This Author's Certificate introduces a microphoto assembly
device for making phototemplates. The device contains a stand with il-
luminator and shutter, a coordinate table with linear displacement data
units, a composing diaphragm with sliding screens, an interchangeable
objective in the form of a lens raster or high-resolution lens, and a
program control unit. To improve accuracy (resolution) and increase
productivity, a removable holder with a projection lens is mounted in a
horizontal base on the coordinate table which rests on the upper surface
of the stand. The table is equipped with an aperture for the lens and a
receptacle for holding a photographic plate. The composition diaphragm
with sliding screens hangs under the coordinate table on columns which
pass through the stand. Fastened on the columns between the composition
diaphragm and the lens is a ring for the phototemplate blank.

1/1

USSR   UDC: 681.3.061.62

BOBRYSHEV, D. N., Candidate of Economic Sciences, RAYKOV, I. G.,
Candidate of Technical Sciences, ZHIDAKOV, V. P., Engineer

"Experience in Development of a Computer Information System for
a Scientific Institution"

Abstract: The paper describes the technical basis of a com-
puter information system; in particular, the devices for input
and output of information, and also the software, which offers
a set of all kinds of possible programs to facilitate communi-
cations between users and the system.

1/1

RAYKOVA, A. P., KLIMENKO, S. M., KOSTYRKO, I. N., GROMASHEVSKIY, V. L.,
and L'VOV, D. K., Institute of Virology imeni D. I. Ivanovskiy, Academy of
Medical Sciences USSR, Moscow

"An Investigation of the Ability of Sumah Virus From the Uukuniemi Group
to Proliferate in Aedes Aegypti Mosquitoes"

Abstract: A. aegypti mosquitoes experimentally infected with Sumah virus
(added to nutrient suspension) were investigated by electron microscopy
and titrations on mice for 2 months. The results revealed a regular re-
production of the virus in the mosquitoes. The virus is present in the
cytoplasm, the intercellular spaces in the epithelial tissues, and salivery
gland ducts of the mosquitoes from the 11th day after infection, but trans-
mission by bite occurs only when the virus concentration is at least 2.5
lg LD_{50} per 0.01 ml of mosquito tissue. Virus particles have an oval shape,
with the long axis 900-1000 A and the short axis 700-800 A long, and they
have a two-layer membrane which is 90-100 A thick.

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USSR   UDC 612.822.8

RAYISOV, T. K., Department of Normal Physiology, Kharkov Medical Institute

"Relative Importance of Limbic Structures in the Regulation of Vegetative.
Components of Behavioral Reactions in Rabbits"

Abstract: The role of the different limbic structures in the organization of
the vegetative components of behavioral reactions was investigated on 14
rabbits, 2-3.2 kg in weight, with monopolar electrodes implanted in different
locations in the dorsal (I) and ventral (II) hippocampal regions, the lateral
(III) and central (IV) amygdaloid nuclei, and in the septum (V). An indiffer-
ent electrode was positioned between the periosteum and the subcutaneous fascia
in the frontonasal area. The experiments were conducted 6-7 days following
implantation; in all, 360 stimulations of 57 discrete locations in the struc-
tures indicated above were carried out, and the EKG and pneumograms (PG) fol-
lowed. Heart rate was slowed most often on stimulation of II -- 62% of the
stimulations in this region elicited a decrease in the heart rate, 21.4% caused
an acceleration, and 16.6% of the stimulations caused no changes. The analogous
values for the stimulation of the different locations in I, III, IV, and V
were, respectively, 43.0-49.5%, 32.0-43.0%, and 12.7-22.5%. V was least effec-
tive in slowing the heart rate (only 43.0% of the stimulations slowed the rate).
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RAYISOV, T. K., Fiziolohichnyy Zhurnal, Vol 19, No 2, 1973, pp 153-158

The observed changes in the heart rate followed a 2-5 sec latent period, and there were indications that the effects of stimulation were polyphasic. In several instances arrhythmia was noted after stimulation of II and III. PG studies showed that the predominating response was an acceleration of respiration. The most active zone in this respect was V, stimulation of different locations elicited respiratory acceleration in 81.8% of the cases, slowing in 3.6% of the cases, and no change in 14.6% of the cases. Stimulations of I, II, IV, and III evoked respiratory acceleration, respectively, in 76.0%, 65.0%, 69.7%, and 73.4% of the cases. The observed changes in the heart rate and respiration may be considered to reflect parasympathetic or sympathetic influences on these structures. It is conceivable that the effects of the limbic system are mediated through the mesencephalic portion of the reticular formation. The present studies have shown that there exists some structural differentiation in the limbic system for affecting the cardiac and the respiratory components of behavioral reactions.

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UDC 669.14.018.8

SHUSTOVA, Z. F., SINYAVINA, R. A., YEMEL'YANOVA, V. A., ROZENFEL'D, I. L.,
KUZNETSOV, G. G., RAYMOND, E. D., and NEFEDOV, V. P.

"Inclination toward Stress Corrosion Cracking of 1Kh16N4B (EP-56) High-Strength
Stainless Steel"

Abstract: This article contains the results of a study of the effect of heat
treatment conditions on the inclination of welded joints of 1Kh16N4B steel to
stress corrosion cracking. This steel is a high-strength steel of the marten-
sitic class heat-treated by quenching from $950-1,050^\circ$ and annealing at 300 or
600°. The stress-rupture strength of the steel is ≥ 120 kg/mm^2 in the former
case and ≥ 100 kg/mm^2 in the latter case. It was established earlier that
neither the basic metal nor the welded joints of this steel in the fully heat-
treated state were inclined to stress corrosion cracking. In the present in-
vestigation the inclination toward stress corrosion cracking was evaluated by
the time of occurrence of cracks in the welded joint in a saline mist at room
temperature.
From the tabulated data it is noted that unannealed samples and samples
annealed at 300° exhibit an inclination toward stress corrosion cracking.

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SHUSTOVA, Z. F., et al., Zashchita Metallov, Vol 6, No 6, Nov-Dec 70, pp 696-700

Welded joints annealed at 600° are not inclined to such cracking. Pictures are presented showing the microstructure of a welded joint made of 1Kh16N4B steel and the hardness distribution in the welded joint. Comparison of metallographic and corrosion studies shows that the section near the weld subjected to heating in the temperature range of 475-550° is distinguished by lower corrosion resistance. It is possible to decrease the tendency toward corrosion cracking of 1Kh16N4B steel joints not only by high temperature annealing (600°) but also by high temperature quenching of the steel before welding. The tendency of the welded joints toward corrosion cracking was found to depend on the structural state of the basic metal before welding. A table is presented showing the effect of slow cooling and induced heating on the stress corrosion cracking of 1Kh16N4B thick sheet steel in a saline mist atmosphere.

It is concluded that welded joints of 1Kh16N4B steel made of material with a strength of 100 kg/mm² and annealed at 300 and 600° are not inclined to stress corrosion. Slow cooling of the steel during quenching increases the tendency of the unannealed and low-temperature (300°) annealed welded joints to stress corrosion cracking. Heating 1Kh16N4B steel subjected to high tempera-

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SHUSTOVA, Z. F., et al., Zashchita Metallov, Vol 6, No 6, Nov-Dec 70, pp 696-700

ture annealing in the 475-550° range can cause a tendency toward corrosion under stress. When quenching with slow cooling the inclination toward cracking is exhibited after a short delay (5 minutes) at 475-550°. In the case of air quenching this inclination is exhibited after a longer period (2 hours).

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Soviet Inventions Illustrated, Section I Chemical, Derwent,

236676   ARGON-ARC WELDING TORCH has a water-
         cooled arrangement in the form of two coa
ial cylindrical channels inside a housing, which
are joined at the lower part by radial openings.
To reduce the protrusion of the electrode to 10-15mm
the ratio of length of cylindrical part of nozzle to
its bore is made 0.3-0.6 and this improves the life
of the tungsten electrode. 30.11.67. as 1200836/
25-27. A.K.BARANOV et alia. (19.6.69.) Bul.7/3.2.69
Class 21h. Int.Cl. B23k.

AUTHORS: Baranov, A. K.; Kryukovskiy, V. N.; Kucherenko, G. P.;
          Konradi, G. G.; Raymond, E. D.; Agroskin, Ya. Z.

19741933

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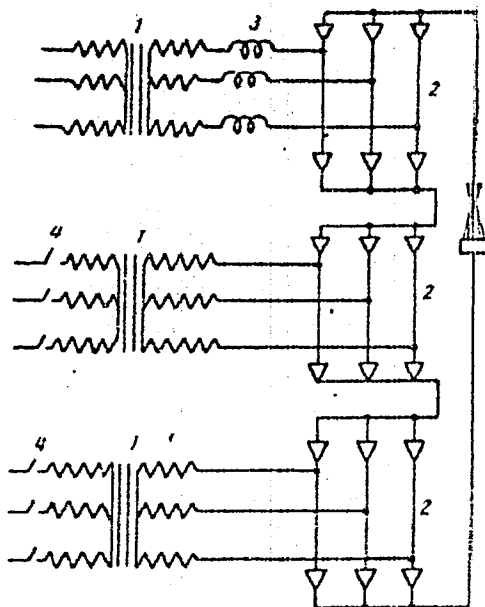
19741934

USSR   UDC: 669.15'782'743'295-196

ZHIRONKIN, A. N., BURKANOV, A. G., RAYNES, L. S., BOROVIKOV, A. A., SOKO-
LOV, V. L., PERSIDSKAYA, L. V., GABERTSETTEL', A. I., TOLOCHIN, V. G.,
TARAPATIN, P. S., Leningrad Kirov Plant

"Graphitized Steel"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki,
No 12, Apr 72, Author's Certificate No 334272, Division C, filed 15 Sep 69,
published 30 Mar 72, p 104

Translation: This Author's Certificate introduces a graphitized steel
which contains carbon, silicon, manganese, titanium and iron. As a dis-
tinguishing feature of the patent, friction properties are improved by
adding copper and taking the components in the following proportions in
percent: carbon--1.3-1.5; silicon--1.3-1.6; manganese--0.3-0.5; copper--
1.2-1.6; titanium--0.25-0.4. Impurities are as follows (in percent):
sulfur--less than 0.03; phosphorus--less than 0.035; chromium--0.20;
nickel--less than 0.20; the remainder iron.

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USSR   UDC 537.311.33:546.28

SIROTA, N.N., KORSHUNOV, F.P., RAYNES, L.YU.

"Investigation Of Radiation Effects On Semiconductor Crystals And P-N Junctions"

V sb. Radiatsion. fiz. nemet. kristallov (Radiations Physics Of Nonmetal
Crystals—Collection Of Works), Minsk, Nauka i tekhn., 1970, pp 6-17 (from
RZh—Elektronika i yeye 'primeneniye., No 1, January 1971, Abstract No 1B123)

Translation: The effect is studied of neutron irradiation on single crystals of
Si and the p-n junctions prepared on their base. The radiation defects are deter-
mined which play a dominant role in the change of the electrical properties in Si
in the process of irradiation by fast neutrons. It is also shown that an increase
of resistance of the base of the p-n junctions during the time of irradiation leads
to attenuation of modulation of its conductivity and to a decrease of the forward
current. The overall dependences mentioned make it possible to clarify the process
of change of the volt-ampere characteristics of the p-n junction. It is establish-
ed that irradiation leads to a decrease of the contact potential differences and
the displacement of the p-n junction to the side of the high-resistance base.
10 ill. 24 ref. Author's abstract.

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USSR

MAKAREVICH, A.I., RAYNES, L.YU., SHIBKO, L.S.

"Effect Of Pile Radiation On High-Resistance Silicon"

V sb. Radiatsion. fiz. nemet. kristallov (Radiation Physics Of Nonmetal Crystals--Collection Of Works), Minsk, Nauka i tekhn., 1970, pp 18-21 (from RZh--Elektronika i yeye primeneniye, No 1, January 1971, Abstract No 1B30)

Translation: The effect is investigated of pile radiation on high-resistance p-type Si. It is shown that with comparatively small doses of fast neutrons ($\sim 10^{12}$ n/cm^2), defects are formed in high resistance Si which gives rise to the appearance in the forbidden band of the energy levels $E_V + 0.27$, $E_V + 40$ and $E_V + 0.42$ e.v. It is shown that defects of the bivacancy type, a complex of primary defect   impurity, and an accumulation of defects are respectively responsible for these levels. 7 ref. Summary.

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USSR   UDC: 621.318.57-529

MOGILEVSKIY, G. V., SOSKOV, A. G., RAYNIN, V. Ye., SMILYANSKIY, I. I.

"A Kipp Oscillator for a Time Relay"

USSR Author's Certificate No 254629, filed 28 Oct 68, published 12 Mar 70
(from RZh-Avtomatika, Telemekhanika i Vychislitel'naya Tekhnika, No 11,
Nov 70, Abstract No 11A66 P)

Translation: This Author's Certificate introduces a kipp oscillator for a
time relay. The device contains two transistors of different conductivity
types, a discharge resistor, and a controlling and a main capacitor connected
between the base of one transistor and the collector of the other. The re-
quired slope for the curve expressing hold time as a function of controlling
voltage is attained by selecting the time for recharging the main condenser
an order of magnitude greater than for the controlling capacitor. One illus-
tration. N. S.

1/1

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RAYNIS, A.

DEVELOPMENT OF HYDROLOGY AND METEOROLOGY IN LITHUANIA

Article by Candidates of Geographic Sciences A. Raynis and K. Kavolelis, Administration of the Hydrometeorological Service of the Lithuanian SSR, Lithuanian Agrometeorological Laboratory of the Main Geophysical Observatory; Moscow, Meteorologiya i Gidrologiya, Russian, No 12, 1972, submitted 10 July 1972, pp 110-115)

This article contains a brief survey of the development of hydrology and meteorology in Lithuania since the Sixteenth Century. A study in main of the development of the hydrometeorological station network and scientific research work.

The history of the development of hydrometeorological sciences in Lithuania reckons several centuries. There is information that some knowledge of the weather, river, spring and other phenomena within the framework of the course on "natural philosophy" was taught in the ancient Vil'nyus University from the first years of its existence (1579). Original scientific papers have been stored at the library of the Vil'nyus State University, imeni V. Kapsukas. Their papers were by Professor A. Milevskiy and Professor Ya. Pochapovskiy in the field of meteorology written in Latin in the first half of the Seventeenth Century [1]. The first systematic observations of the air temperature started in May 1770 by the Vice-Chancellor of the University Martinas Pochobut as in Vil'nyus have continued without interruption for more than 200 years. It is possible to judge the level of meteorology at the end of the Eighteenth and the beginning of the Nineteenth Centuries by the documents of the then Ministry of Education of the Russian Empire which recommended the organization of meteorological observations at all the training institutions of the okrug by the czarist of the Vil'nyus University [4]. The first meteorological data on the territory of Lithuania were used in the papers by A. Gumbol'dt (1870), K. Veselovskiy (1857) and other prominent scientists of the time.

The czarist repressions after the uprising of 1831, in particular, closing many decades. Some revival took place only in the second half of the Nineteenth Century in connection with the activity of voluntary subscribers of the Russian Geographic Society and the Main Physics Observatory. Before the beginning of the first World War there were about 30 meteorological stations at outposts

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27 Jul 73

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